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Terms: **patno=6124597** ([Edit Search](#))

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*889017 (08) 6124597 September 26, 2000*

UNITED STATES PATENT AND TRADEMARK OFFICE GRANTED PATENT  
**6124597**

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September 26, 2000

Method and devices for laser induced fluorescence attenuation spectroscopy

**REISSUE:** January 23, 2002 - Reissue Application filed Ex. Gp.: 2878; Re. S.N. 10/056,335  
(O.G. June 18, 2002)

**INVENTOR:** Shehada, Ramez E. N., Los Angeles, CA; Marmarelis, Vasilis Z., Irvine, CA;  
Grundfest, Warren S., Los Angeles, CA

**APPL-NO:** 889017 (08)

**FILED-DATE:** July 7, 1997

**GRANTED-DATE:** September 26, 2000

**ASSIGNEE-AT-ISSUE:** Cedars-Sinai Medical Center, Los Angeles, CA

**ASSIGNEE-AFTER-ISSUE:** March 16, 1998 - ASSIGNMENT OF ASSIGNORS INTEREST (SEE  
DOCUMENT FOR DETAILS)., CEDARS-SINAI MEDICAL CENTER 8700 BEVERLY BOULEVARD  
LOS ANGELES CALIFORNIA 900 48, Reel and Frame Number: 009072/0442

**LEGAL-REP:** Pretty, Schroeder & Poplawski

**PUB-TYPE:** September 26, 2000 - Utility Patent having no previously published pre-grant  
publication (A)

**PUB-COUNTRY:** United States (US)

**US-MAIN-CL:** 250#461.2


**US-ADDL-CL:** 250#458.1, 356#342, 600#320, 600#321, 600#323


**CL:** 250, 356, 600

**SEARCH-FLD:** 250#461.2, 250#458.1, 600#321, 600#320, 600#323, 356#342


**IPC-MAIN-CL:** G 01N021#64

**PRIM-EXMR:** Hannaher, Constantine

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US 6,124,597

10/056335

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Last update of file: 2003/02/27 (YYYY/MM/DD) 2003-08/UP (basic update)

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?us6124597/pn

\*\* SS 1: Results 1

Search statement 2

?prt fu legalall max

1/1 PLUSPAT - (C) QUESTEL-ORBIT  
PN - US6124597 A 20000926 [US6124597]  
TI - (A) Method and devices for laser induced fluorescence attenuation spectroscopy  
PA - (A) CEDARS SINAI MEDICAL CENTER (US)  
PAO - Cedars-Sinai Medical Center, Los Angeles CA [US]  
IN - (A) SHEHADA RAMEZ E N (US); MARMARELIS VASILIS Z (US); GRUNDFEST WARREN S (US)  
AP - US88901797 19970707 [1997US-0889017]  
PR - US88901797 19970707 [1997US-0889017]  
IC - (A) G01N-021/64  
EC - A61B-005/00P4  
- G01N-021/64A  
PCL - ORIGINAL (O) : 250461200; CROSS-REFERENCE (X) : 250458100 356342000  
600320000 600321000 600323000  
DT - Corresponding document  
CT - US4641650; US4675529; US4707131; US4753530; US4786813; US4945245;  
US4957114; US5122974; US5341805; US5452723; US5456252; US5495850;  
US5507287; US5635402; US5760406; EP0703445 A2; WO8912223; WO9708538  
STG - (A) United States patent  
AB - The Laser Induced Fluorescence Attenuation Spectroscopy (LIFAS) method and apparatus preferably include a source adapted to emit radiation that is directed at a sample volume in a sample to produce return light from the sample, such return light including modulated return light resulting from modulation by the sample, a first sensor, displaced by a first distance from the sample volume for monitoring the return light and generating a first signal indicative of the intensity of return light, a second sensor, displaced by a second distance from the sample volume, for monitoring the return light and generating a second signal indicative of the intensity of return light, and a processor associated with the first sensor and the second sensor and adapted to process the first and second signals so as to determine the modulation of the sample. The methods and devices of the inventions are particularly well-suited for determining the wavelength-dependent attenuation of a sample and using the attenuation to restore the intrinsic laser induced fluorescence of the sample. In turn, the attenuation and intrinsic laser induced fluorescence can be used to determine a characteristic of interest, such as the ischemic or hypoxic condition of biological tissue.  
UP - 2000-39

3/5/03

US 6,124,597

10/056335

1/1 LGST - (C) LEGSTAT  
PN - US 6124597 [US6124597]  
AP - US 889017/97 19970707 [1997US-0889017]  
DT - US-P  
ACT - 19970707 US/AE-A  
APPLICATION DATA (PATENT)  
{US 889017/97 19970707 [1997US-0889017]}  
- 20000926 US/A  
PATENT  
- 20020618 US/RF  
REISSUE APPLICATION FILED  
20020123  
UP - 2002-26

1/1 PAST - (C) Thomson Derwent  
AN - 200225-001716  
PN - 6124597 A [US6124597]  
DT - A (UTILITY)  
OG - 2002-06-18  
CO - REA  
ACT - REISSUE APPLICATION FILED  
SH - REISSUE APPLICATION FILED

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1 Patent Groups  
\*\* SS 1: Results 7

Search statement 2

?famstate nonstop

1/7 INPADOC - (C) INPADOC  
PN - AU 752061 B2 20020905 [AU-752061]  
TI - METHOD AND DEVICES FOR LASER INDUCED FLUORESCENCE ATTENUATION  
SPECTROSCOPY (LIFAS)  
IN - SHEHADA RAMEZ E; MARMARELIS VASILIS Z; GRUNDFEST WARREN S  
PA - CEDARS SINAI MEDICAL CENTER  
AP - AU 78306/98-A 19980609 [1998AU-0078306]  
PR - US 889017/97-A 19970707 [1997US-0889017]

3/5/03

US 6,124,597

10/056335

- WO 9811937/98(US)-W 19980609 [1998WO-US11937]  
IC - G01N-021/49; A61B-005/00

2/7 INPADOC - (C) INPADOC

PN - AU 78306/98 A1 19990208 [AU9878306]  
TI - METHOD AND DEVICES FOR LASER INDUCED FLUORESCENCE ATTENUATION  
SPECTROSCOPY (LIFAS)  
IN - SHEHADA RAMEZ E; MARMARELIS VASILIS Z; GRUNDFEST WARREN S  
PA - CEDARS SINAI MEDICAL CENTER  
AP - AU 78306/98-A 19980609 [1998AU-0078306]  
PR - US 889017/97-A 19970707 [1997US-0889017]  
- WO 9811937/98(US)-W 19980609 [1998WO-US11937]

3/7 INPADOC - (C) INPADOC

PN - EP 995095 A2 20000426 [EP-995095]  
TI - METHOD AND DEVICES FOR LASER INDUCED FLUORESCENCE ATTENUATION  
SPECTROSCOPY (LIFAS)  
LA - ENG  
IN - SHEHADA RAMEZ E [US]; MARMARELIS VASILIS Z [US]; GRUNDFEST WARREN S  
[US]  
PA - CEDARS SINAI MEDICAL CENTER [US]  
AP - EP 98926475/98-A 19980609 [1998EP-0926475]  
PR - WO 9811937/98(US)-W 19980609 [1998WO-US11937]  
- US 889017/97-A 19970707 [1997US-0889017]  
IC - G01N-001/00  
DS - CH\* DE\* FR\* GB\* LI\*

1/1 LEGALI - (C) LEGSTAT

PN - EP 995095 [EP-995095]  
AP - EP 98926475/98 19980609 [1998EP-0926475]  
DT - EP-P  
ACTE- 19980609 EP/AE-A  
EP-APPLICATION  
{EP 98926475/98 19980609 [1998EP-0926475]}  
- 20000426 EP/AK-A2 [+]  
DESIGNATED CONTRACTING STATES IN AN APPLICATION WITHOUT SEARCH REPORT:  
CH DE FR GB LI  
- 20000426 EP/A2 [+]  
PUBLICATION OF APPLICATION WITHOUT SEARCH REPORT  
- 20000426 EP/17P [+]  
REQUEST FOR EXAMINATION FILED  
19991215  
- 20000503 EP/RIN1  
INVENTOR (CORRECTION)  
SHEHADA, RAMEZ, E. \* MARMARELIS, VASILIS, Z. \* GRUNDFEST, WARREN, S.  
- 20010228 EP/17Q [+]  
FIRST EXAMINATION REPORT  
20010116  
UP - 2001-09

4/7 INPADOC - (C) INPADOC

PN - JP 2001509589 T2 20010724 [JP2001509589]  
AP - JP 2000502389/00-A 19980609 [2000JP-0502389]  
PR - US 889017/97-A 19970707 [1997US-0889017]  
- WO 9811937/98(US)-W 19980609 [1998WO-US11937]

3/5/03

US 6,124,597

10/056335

IC - G01N-021/27; A61B-005/145; A61B-010/00; G01N-021/64

5/7 INPADOC - (C) INPADOC

PN - US 6124597 A 20000926 [US6124597]

TI - METHOD AND DEVICES FOR LASER INDUCED FLUORESCENCE ATTENUATION  
SPECTROSCOPY

IN - SHEHADA RAMEZ E N [US]; MARMARELIS VASILIS Z [US]; GRUNDFEST WARREN S  
[US]

PA - CEDARS SINAI MEDICAL CENTER [US]

AP - US 889017/97-A 19970707 [1997US-0889017]

PR - US 889017/97-A 19970707 [1997US-0889017]

IC - G01N-021/64

1/1 LEGALI - (C) LEGSTAT

PN - US 6124597 [US6124597]

AP - US 889017/97 19970707 [1997US-0889017]

DT - US-P

ACTE- 19970707 US/AE-A

APPLICATION DATA (PATENT)

{US 889017/97 19970707 [1997US-0889017]}

- 20000926 US/A

PATENT

- 20020618 US/RF

REISSUE APPLICATION FILED

20020123

UP - 2002-26

6/7 INPADOC - (C) INPADOC

PN - WO 9902956 A2 19990121 [WO9902956]

TI - METHOD AND DEVICES FOR LASER INDUCED FLUORESCENCE ATTENUATION  
SPECTROSCOPY (LIFAS)

LA - ENG

IN - SHEHADA RAMEZ E; MARMARELIS VASILIS Z; GRUNDFEST WARREN S

PA - CEDARS SINAI MEDICAL CENTER [US]

AP - WO 9811937/98(US)-A 19980609 [1998WO-US11937]

PR - US 889017/97-A 19970707 [1997US-0889017]

IC - G01N-000/00

DS - AU\* JP\* AT BE CH CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE

1/1 LEGALI - (C) LEGSTAT

PN - WO 9902956 [WO9902956]

AP - WO 9811937/98(US) 19980609 [1998WO-US11937]

DT - WO-P

ACTE- 19980609 WO/AE-A

APPLICATION DATA

{WO 9811937/98(US) 19980609 [1998WO-US11937]}

- 19990121 WO/AK-A2 [+]

DESIGNATED STATES CITED IN A PUBLISHED APPLICATION WITHOUT SEARCH  
REPORT

AU JP

- 19990121 WO/AL-A2 [+]

DESIGNATED COUNTRIES FOR REGIONAL PATENTS CITED IN A PUBLISHED  
APPLICATION WITHOUT SEARCH REPORT

AT BE CH CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE

- 19990121 WO/A2 [+]

3/5/03

US 6,124,597

10/056335

PUBLICATION OF THE INTERNATIONAL APPLICATION WITHOUT THE INTERNATIONAL SEARCH REPORT

- 19990325 WO/DFPE  
REQUEST FOR PRELIMINARY EXAMINATION FILED PRIOR TO EXPIRATION OF 19TH MONTH FROM PRIORITY DATE
- 19990429 WO/AK-A3 [+]  
DESIGNATED STATES CITED IN A SUBSEQUENTLY PUBLISHED SEARCH REPORT  
AU JP
- 19990429 WO/AL-A3 [+]  
DESIGNATED COUNTRIES FOR REGIONAL PATENTS CITED IN A SUBSEQUENTLY PUBLISHED SEARCH REPORT  
AT BE CH CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE
- 19990429 WO/A3 [+]  
SUBSEQUENT PUBLICATION OF THE INTERNATIONAL SEARCH REPORT
- 19990506 WO/121  
EP: PCT APP. ART. 158 (1)
- UP - 1999-20

7/7 INPADOC - (C) INPADOC

- PN - WO 9902956 A3 19990429 [WO9902956]
- TI - METHOD AND DEVICES FOR LASER INDUCED FLUORESCENCE ATTENUATION SPECTROSCOPY (LIFAS)
- LA - ENG
- IN - SHEHADA RAMEZ E; MARMARELIS VASILIS Z; GRUNDFEST WARREN S
- PA - CEDARS SINAI MEDICAL CENTER [US]
- AP - WO 9811937/98(US)-A 19980609 [1998WO-US11937]
- PR - US 889017/97-A 19970707 [1997US-0889017]
- IC - G01N-021/49; A61B-005/00
- DS - AU\* JP\* AT BE CH CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE

1/1 LEGALI - (C) LEGSTAT

- PN - WO 9902956 [WO9902956]
- AP - WO 9811937/98(US) 19980609 [1998WO-US11937]
- DT - WO-P
- ACTE- 19980609 WO/AE-A  
APPLICATION DATA  
{WO 9811937/98(US) 19980609 [1998WO-US11937]}
- 19990121 WO/AK-A2 [+]  
DESIGNATED STATES CITED IN A PUBLISHED APPLICATION WITHOUT SEARCH REPORT  
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AT BE CH CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE
- 19990121 WO/A2 [+]  
PUBLICATION OF THE INTERNATIONAL APPLICATION WITHOUT THE INTERNATIONAL SEARCH REPORT
- 19990325 WO/DFPE  
REQUEST FOR PRELIMINARY EXAMINATION FILED PRIOR TO EXPIRATION OF 19TH MONTH FROM PRIORITY DATE
- 19990429 WO/AK-A3 [+]  
DESIGNATED STATES CITED IN A SUBSEQUENTLY PUBLISHED SEARCH REPORT  
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- 19990429 WO/AL-A3 [+]  
DESIGNATED COUNTRIES FOR REGIONAL PATENTS CITED IN A SUBSEQUENTLY PUBLISHED SEARCH REPORT

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US 6,124,597

10/056335

AT BE CH CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE  
- 19990429 WO/A3 [+]  
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- 19990506 WO/121  
EP: PCT APP. ART. 158 (1)  
UP - 1999-20



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S93		USPT	dose and steril\$ and (sensor or detector) and capacitor and wireless	<input type="checkbox"/>